Soviet Union Seeks Balance in Technology Growth

By William H. Gregory

Soviet leaders are wrestling with the causes of a slowdown in economic growth that has become increasingly difficult to explain away since 1960, and the ramifications are extending to the aerospace industrial complex.

Under Josef Stalin, Soviet economic resources were marshalled to build a heavy and defense industry base. Unit output, regardless of quality or modernity, was the sole measure of progress.

Nikita Khrushchev pyramided onto this a thrust for science and technology. The grasp for all technology was uninhibited, but aeronautics, missile and space technology were in the vanguard.

Now Khrushchev's successors seem to be saying that not enough of that technology was getting out of the laboratory and into the plant.

At the same time, another keystone in the Soviet economic system is being subjected to some pointed prodding. This is the centralized planning system itself, which is catching some of the blame for the slackening growth rate.

Aerospace, at least in its national security aspects, is probably insulated from a good deal of the economic ferment. Economists asked by the U.S. Air Force in the 1950s to analyze the effect of economic constraints on Soviet military and technological effort concluded that there was no necessary relationship. The Soviets could probably do anything they chose to do within the absolute limits of manpower, raw materials, necessity and ingenuity.

Nevertheless there are some ripples in the aerospace area that may be related to the economic policy evolution:

- Production of aerospace hardware in many areas seems to be at lower rates than in the last decade.
- More sophisticated manufactured components are being found in Soviet aircraft that Westerners have been able to examine closely.
- Soviet commitments to production from its fecund stable of experimental prototypes has been very conservative, and often slow. This may be changing.

Two cases that come to mind are the Antonov An-14 Little Bee twin-piston-engine light utility transport, and the Yak-40 turbofan short-haul transport.

The An-14, intended as a missile site courier and small Aeroflot passenger-cargo transport, was unveiled in 1958. Modifications appeared over the years, but production has only begun within the last several months at the Progress machine plant at Arseniev, north of Vladivostok on the Soviet Pacific Ocean littoral.

Unveiling of the Yak-40 came just before the Paris air show last year. Now word from the USSR is that it has been ordered into production.

Too much stock should not be placed in these isolated instances. It may be that the Russians just found they did not require a missile site support aircraft until the last year or so. It may also be that the Yak-40 will be ordered into production, but like the Il-62 four-engine long range jet transport, not get there for quite a while.

While delay in production in the past may have resulted from technical problems—not an unfamiliar story in the West—there is undoubtedly a policy reason also. Once committed to production, Soviet aircraft and missiles remain in production for a long time, often at low rates, what might be considered uneconomic rates in the West. Thus, there is probably great caution exercised before a commitment is made in the first place.

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The accompanying chart of Soviet aerospace effort shows a flattening of the curve since early in the 1960s after a steep climb in the previous decade.

It is based on a year-by-year calculation for Soviet development, and probable production of aircraft, missiles and spacecraft, largely drawn from what the Soviets have shown at air shows, ceremonial parades and space launches. It is only a general guide to the pattern of Soviet aerospace effort, but probably does represent relative magnitudes.

Several factors are involved:

- The curve may be flattening of its own weight. Soviet aerospace growth has been extremely steep since 1955, as the chart indicates. Such growth is unsustainable as the absolute numbers grow larger, and the increase usually shifts from geometric to arithmetic, as the case is here. It is not necessarily the same as a maturing growth curve familiar in Western industry, with a permanent plateau at the end of a long steep climb.
- The Soviets may have reached planned inventory levels in certain areas—tactical aircraft, for example—and are channeling resources into ground force mobility, typified by some of the modernized equipment shown in recent Soviet displays.
- The Soviets may have found it necessary to build other parts of their industrial support base to carry out projects in the future.

Soviet investment has always been a high proportion of national product. Investment in equipment accelerated after World War 2, particularly since 1955, and has continued to accelerate faster than construction of facilities.

A Soviet economist, Alb. L. Vaynsteyn, last year threw some light on what seems to be a major policy problem. Labor productivity, he said, should rise as investment in capital equipment rises. More plant and equipment should produce more productive enterprises.

In reality, Vaynsteyn said, labor productivity begins to fall, beyond a certain level of investment, and that this is what has happened in the Soviet Union. Furthermore it has been a continual process since 1950.

"A significant and continuous drop in labor productivity in industry serves as a severe warning," he said, "that the share of accumulation [investment] in the national economy should not rise."

What Vaynsteyn seems to be getting at is that Soviet industry generally has not been able to utilize the vast invest-